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Regulatory Affairs

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February 22, 1995

Mr. William F. Caton  
Secretary  
Federal Communications Commission  
Room 222  
1919 M Street NW  
Washington, D.C. 20554

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FEB 22 1995

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF SECRETARY

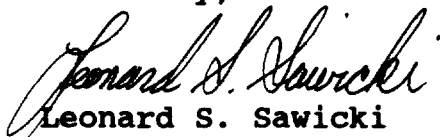
Re: CC Docket 94-54

Dear Mr. Caton:

DOCKET FILE COPY ORIGINAL

On February 21, Steve Donovan, Steve Herlocher, Larry Blosser, and I met with Judy Argentieri and Barbara Esbin (both of the Wireless Telecommunications Bureau), and Greg Rosston and Florence Setzer (both of the Office of Plans and Policy). The purpose of the meeting discuss was to explain wireless signalling and interconnection. The attached charts contain the information used during the meeting.

Sincerely,

  
Leonard S. Sawicki

Attachments

cc: Ms. Argentieri  
Ms. Esbin  
Mr. Rosston  
Ms. Setzer

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List A B C D E

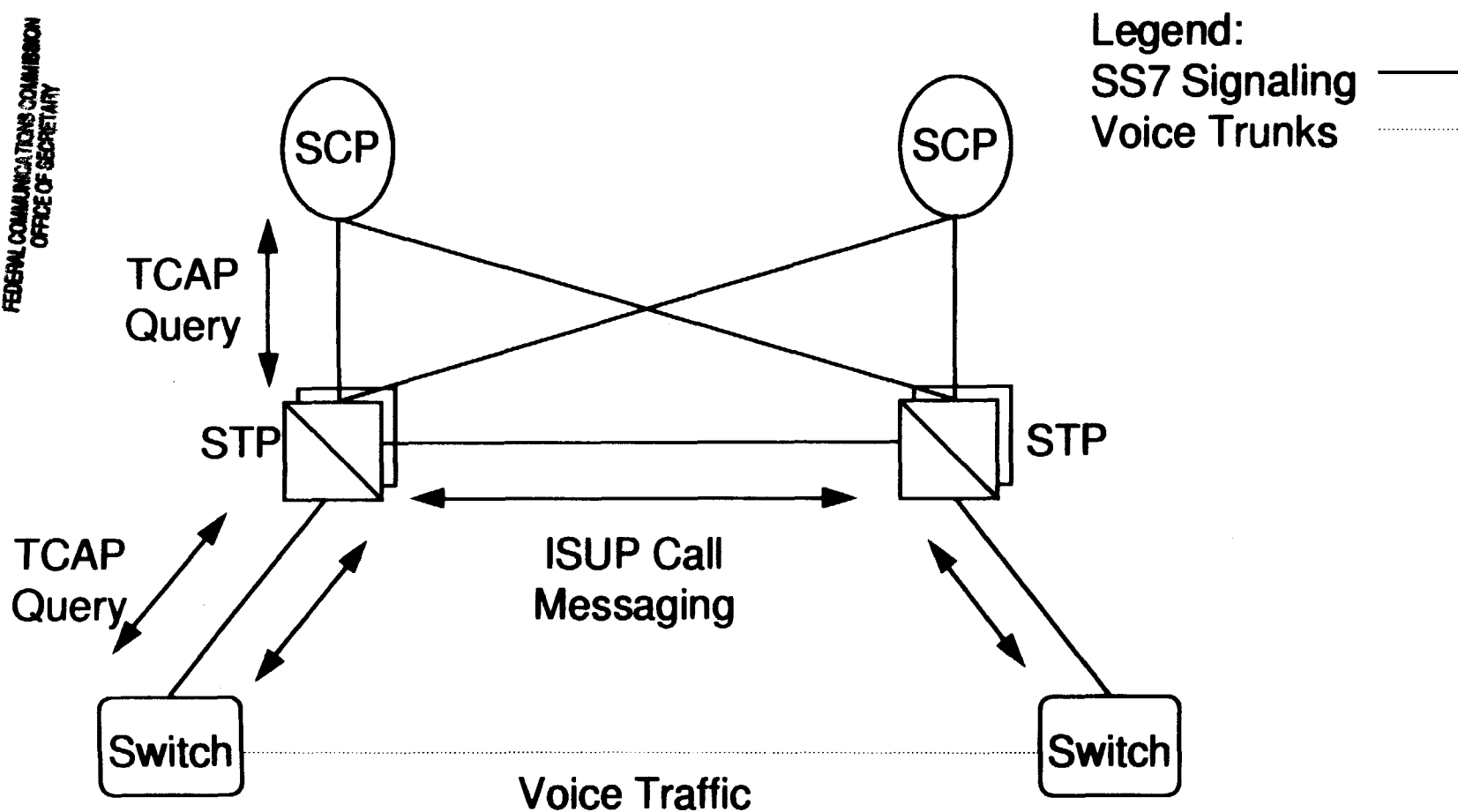


# Traditional SS7 Implementation

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# MF vs. ISUP Feature Support

## MF Supported Information

- Called Party Number
- Calling Party Number (O)

(O) - optional or not always supported

## ISUP Supported Information

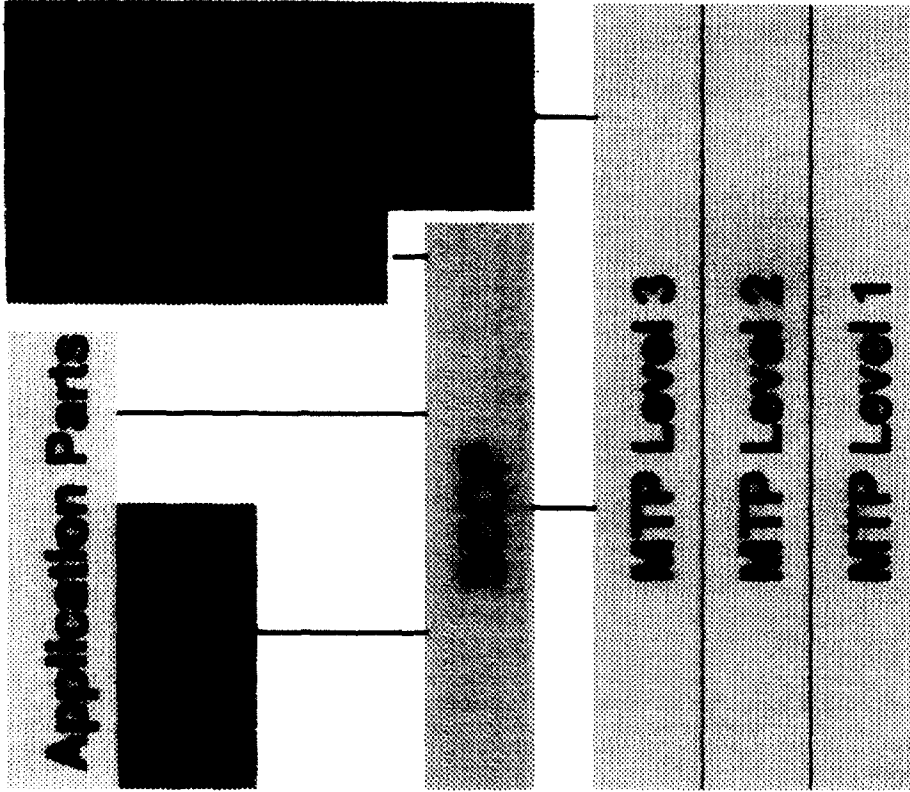
- Called Party Number
  - Calling Party Number
  - CIP or TNS - Carrier Identification Parameter or Transit Network Selection (preferred IXC of subscriber)
  - Bearer Capability (call type)
  - Call Forwarding Information
  - Internetworking Characteristics (has the call passed through MF / Satellite / Other networks?)
  - Billing Options
  - etc
-

# SS7 Protocol vs OSI Model

## OSI

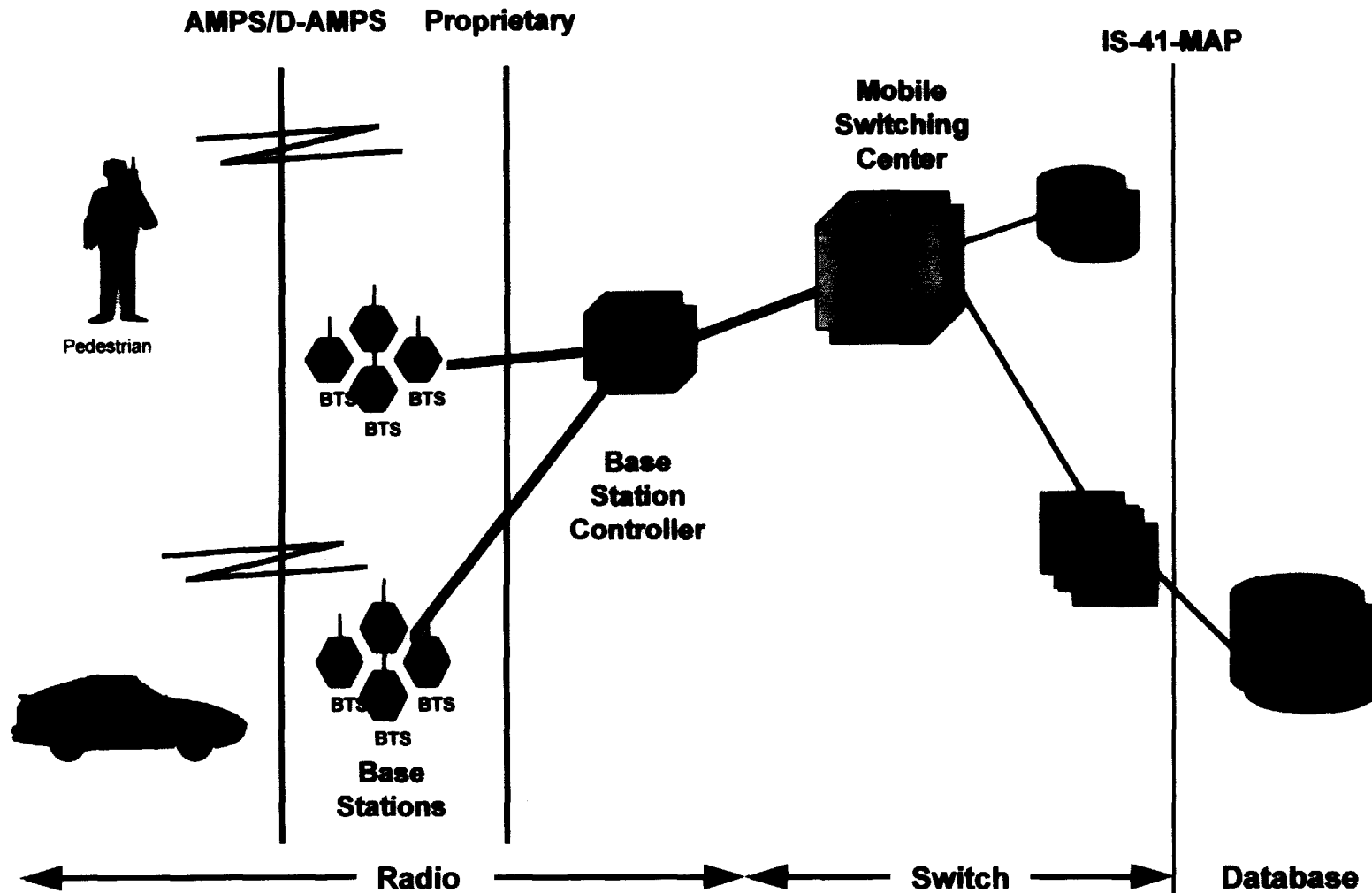
Application
Presentation
Session
Transport
Network
Data Link
Physical

## SS7



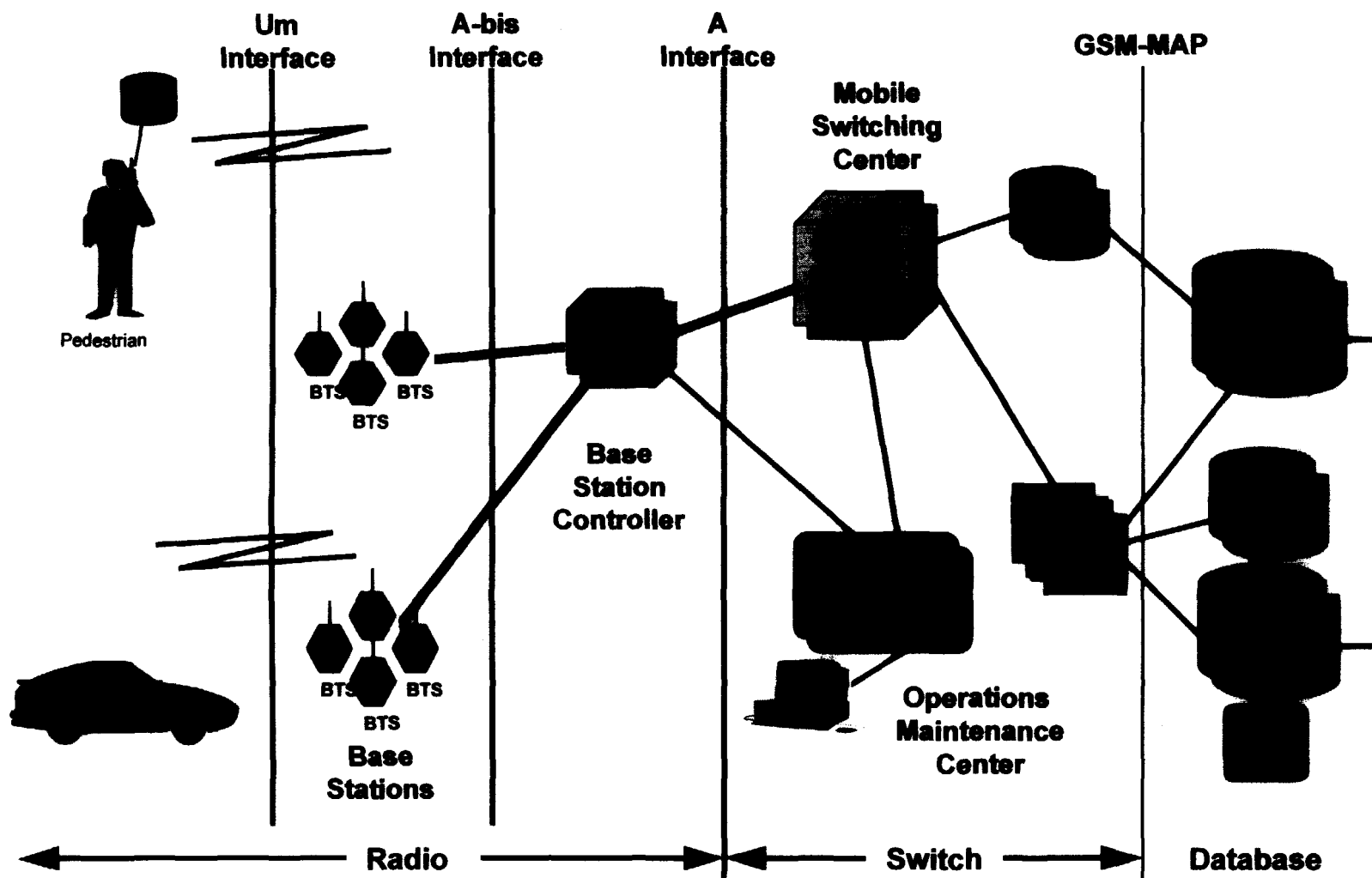


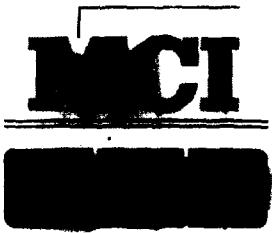
# IS-41 Network Architecture



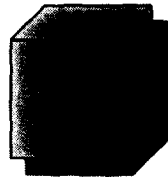


# GSM Network Architecture



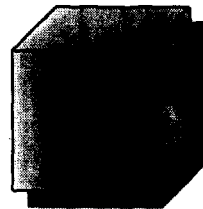


## **PCS Switching Network Elements**



### **LEC Access Tandem (AT)**

- Provides Inter Network Switching between IXC/Cellcos and MSCs
- Gateway to Operator Services/ Emergency Services



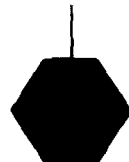
### **Mobile Switching Center (MSC)**

- Management of BSCs
- BSC HANDOVER
- Updates VLR
- Gateway to HLR
- Tandem through other MSCs (Anchoring)



### **Base Station Controller (BSC)**

- Management of BTSs
- HANDOVER between BTSs
- OAM of BTS network



**BTS**

### **Base Transceiver Station (BTS)**

- Tx/Rx RF Interface to Mobile Subscriber (Um interface)
- RF Management of BTS Cell

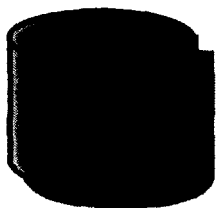


## Wireless IN Database Network Elements (cont.)



### Short Message Service Center (SMSC)

- Stores Short Messages (Message Mail)
- Forwards Short Messages to Handsets
- Sends Voicemail alerts to Handset



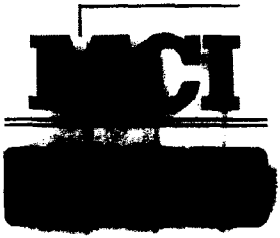
### Voicemail (VM), Audio Response Unit (ARU)

- Stores voice mail boxes
- Communicates profile changes to HLR Management System

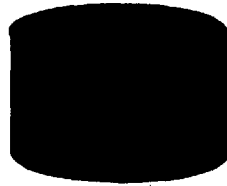


### Subscriber Identity Module (SIM)

- Smart card storage inserted into handset
- Stores subscriber unique security key checked against AuC
- Stores subscriber feature data (e.g. speed dial numbers)
- Buffers short messages received for that user



## Wireless IN Database Network Elements



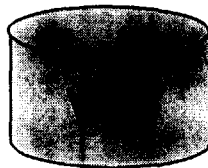
### Home Location Register (HLR)

- Permanent Subscriber Data
- Subscriber Profile
- Supplementary Services per Subscriber
- Automatic Find-Me Routing
- Short Message Waiting Indicator



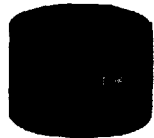
### Authentication Center (AuC)

- Associated with HLR
- Authentication Parameters per Subscriber
- Provides Secure MS Access to Network
- Random Security Keys



### Visitor Location Register (VLR)

- One per MSC
- Temporary Subscriber Data for each MS
- Location Information
- Updates HLR



### Equipment Identification Register (EIR)

- Maintains Equipment Information
- Polices MS's and Subscriber Access